

Figure 1 A

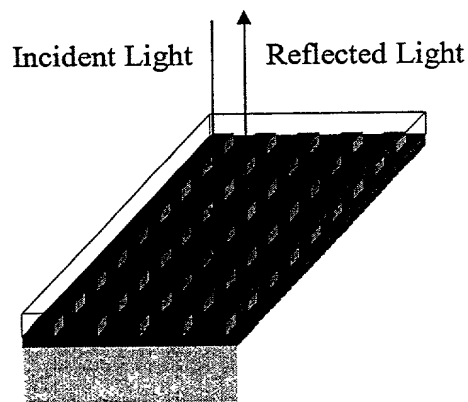


Figure 1 B

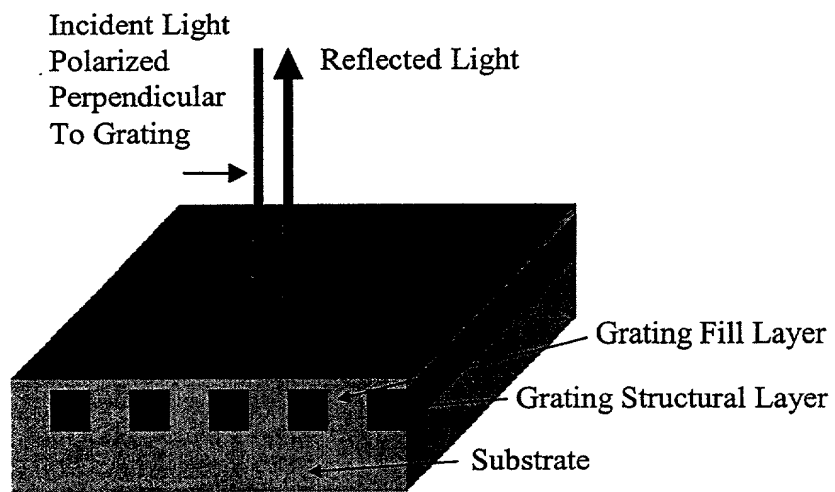


Figure 2

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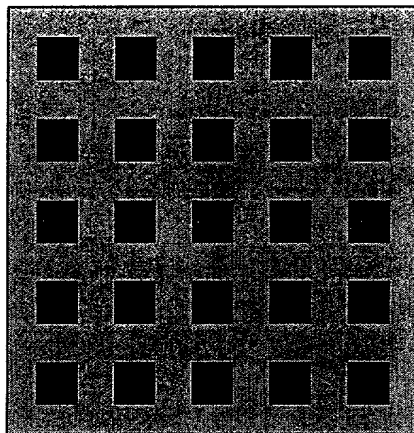


Figure 3A

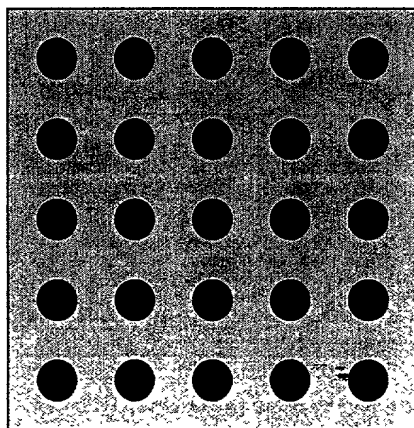


Figure 3B

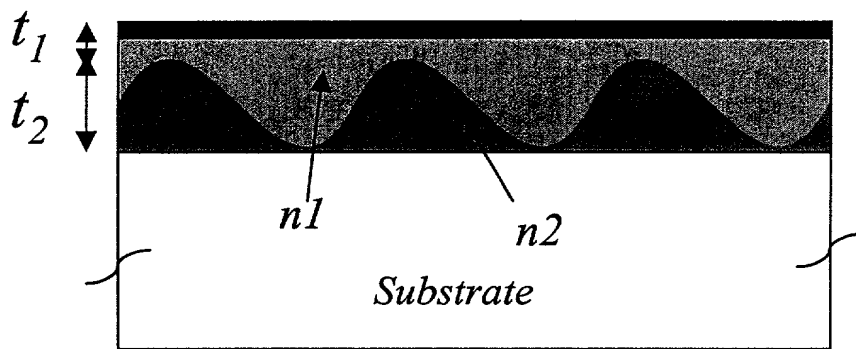


Figure 4

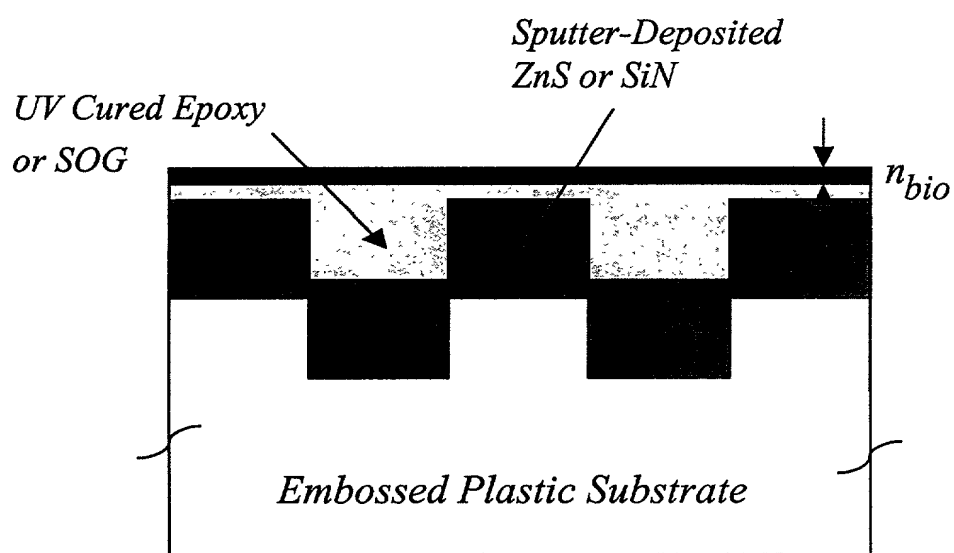


Figure 5

Amine

- Sulfo-succinimidyl-6-(biotinamido)hexanoate (Sulfo-NHS-LC-Biotin)
 - Streptavidin / avidin then biotinylated molecule
- N,N'-disuccinimidyl carbonate (DSC); • -NH₂, non-cleavable
- Dimethyl pimelimidate (DMP); • -NH₂, non-cleavable
- Dimethyl 3,3'-dithiobispropionimidate (DTBP); • -NH₂, cleavable
- 1-Ethyl-3-(3-Dimethylaminopropyl)carbodiimide Hydrochloride (EDC) and N-Hydroxysulfosuccinimide (Sulfo-NHS); • -COOH
- Sulfo-succinimidyl 6-[α-methyl-α-(2-pyridyl-dithio)toluamido] hexanoate (Sulfo-LC-SMPT); • -SH, cleavable
- N-(B-Maleimidopropoxy)succinimide ester (BMPS)
 - -SH₂, non-cleavable
- Sulfo-succinimidyl 4-[N-maleimidomethyl]cyclohexane-1-carboxylate (Sulfo-SMCC); • -SH, non-cleavable

Aldehyde

- Directly with aldehyde or first amino then aldehyde
 - -NH₂

Ni(II)

- Using Nitrilotriacetic acid (NTA) group, which forms a chelate with Ni(II)
 - His-tagged molecules

Figure 6

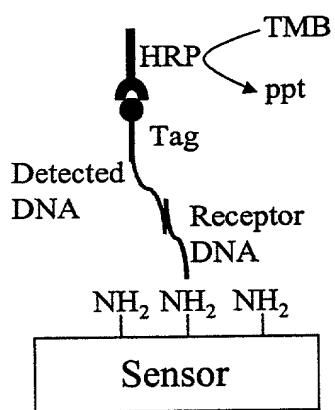


Figure 7A

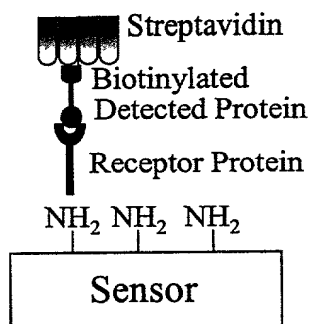


Figure 7B

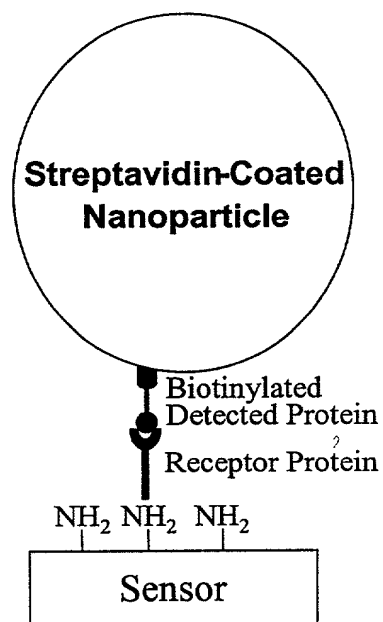


Figure 7C

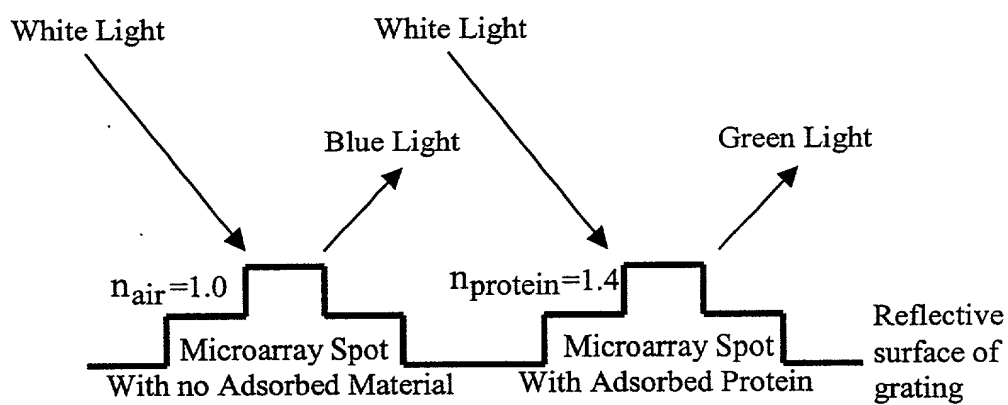
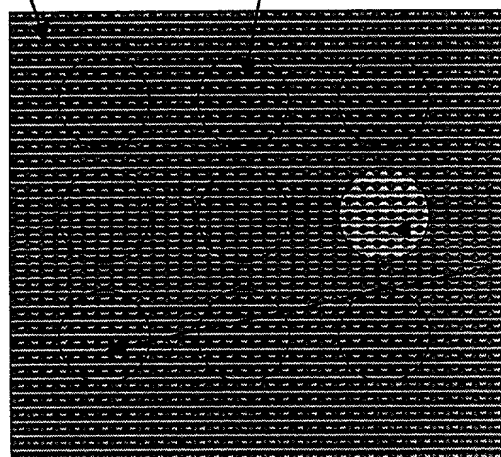


Figure 8

Grating structure

Microarray location
without affinity-adsorbed
molecules



Microarray
locations with
affinity-adsorbed
molecules

Figure 9

□ Microtiter plate

□ Microarray slide

Plastic bottomless microtiter plate.
Holes in plate are open from top to bottom

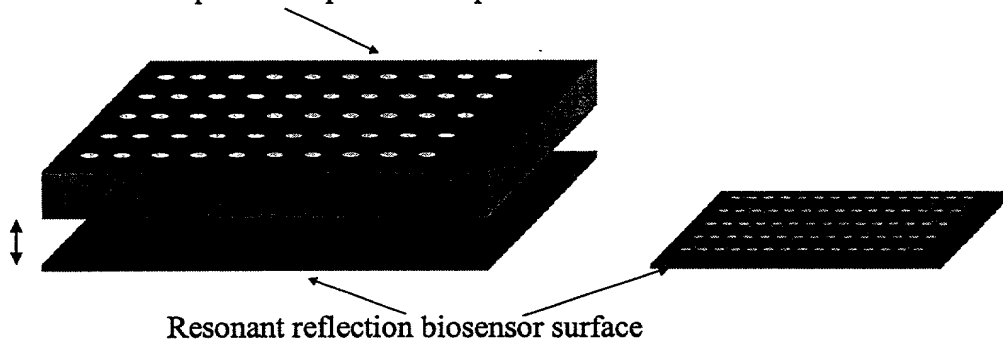


Figure 10A

Figure 10B



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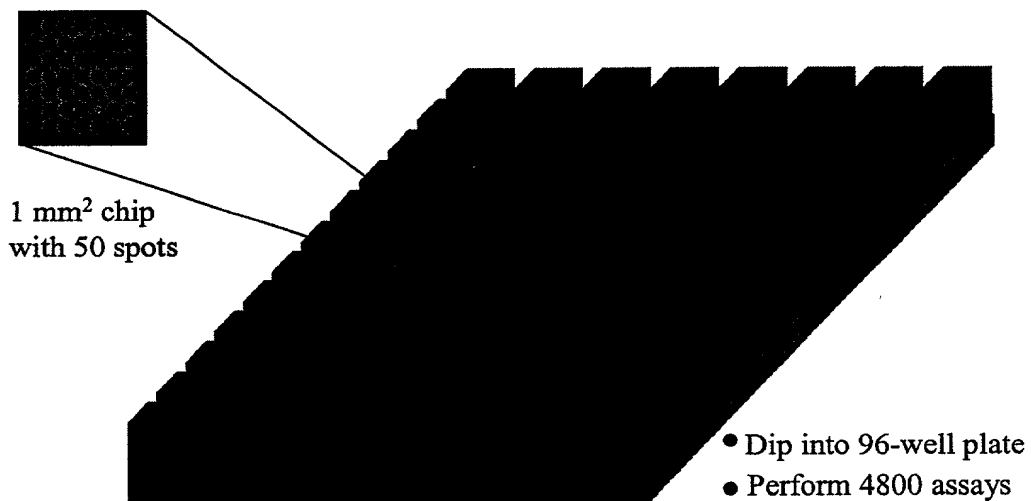


Figure 11

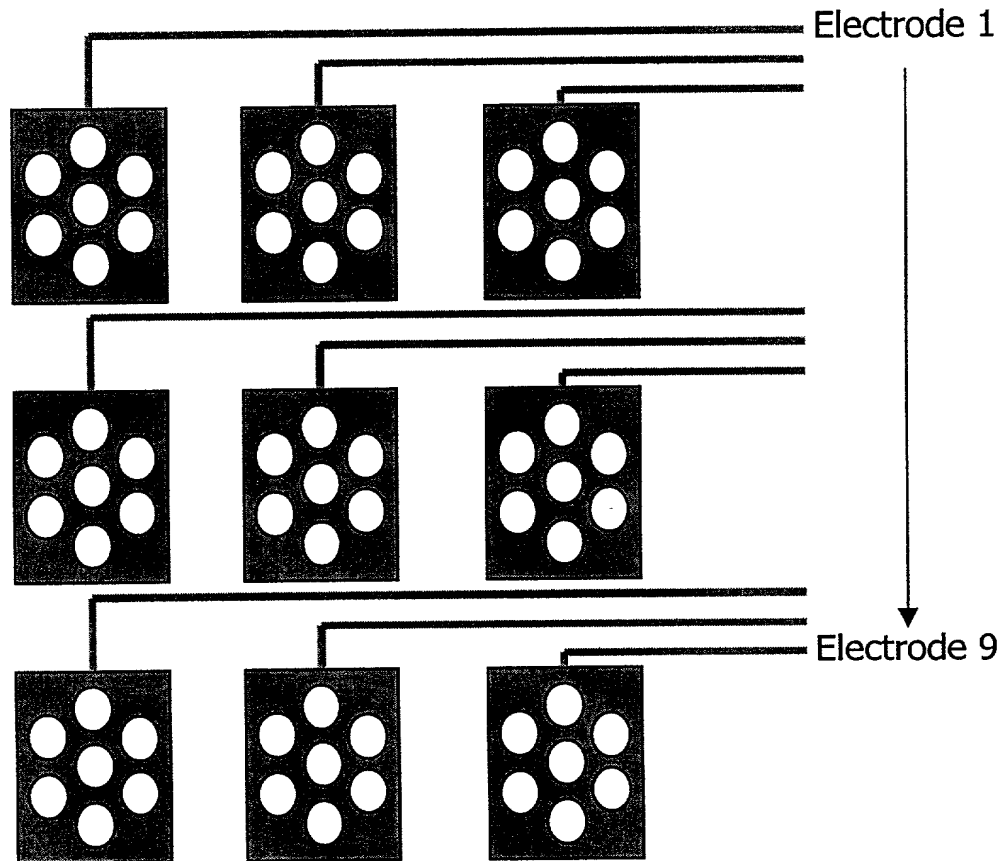
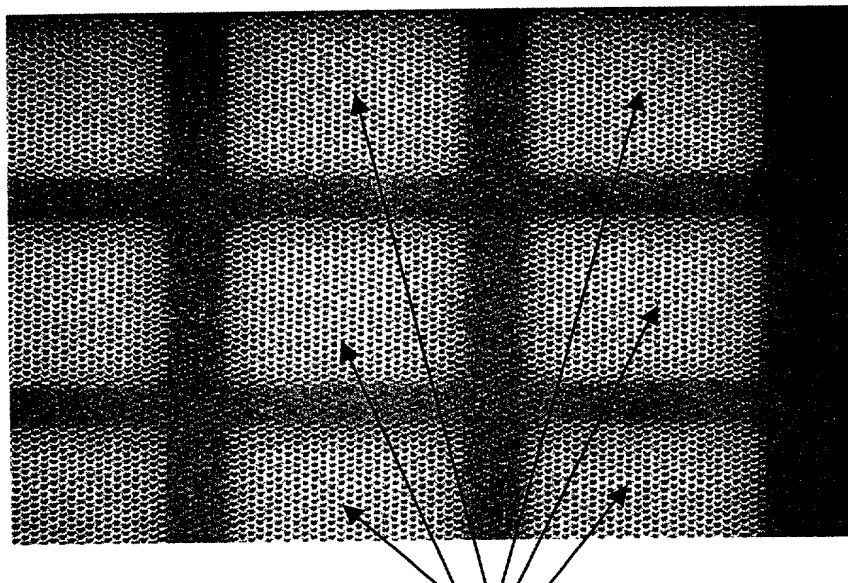


Figure 12



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Separate electrode grating regions

Figure 13

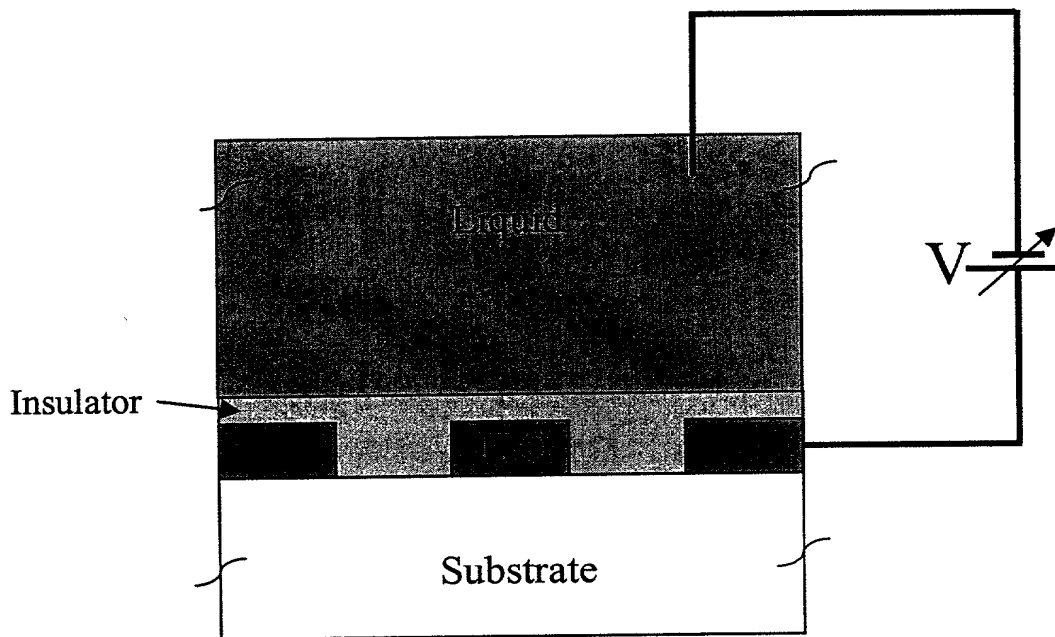


Figure 14

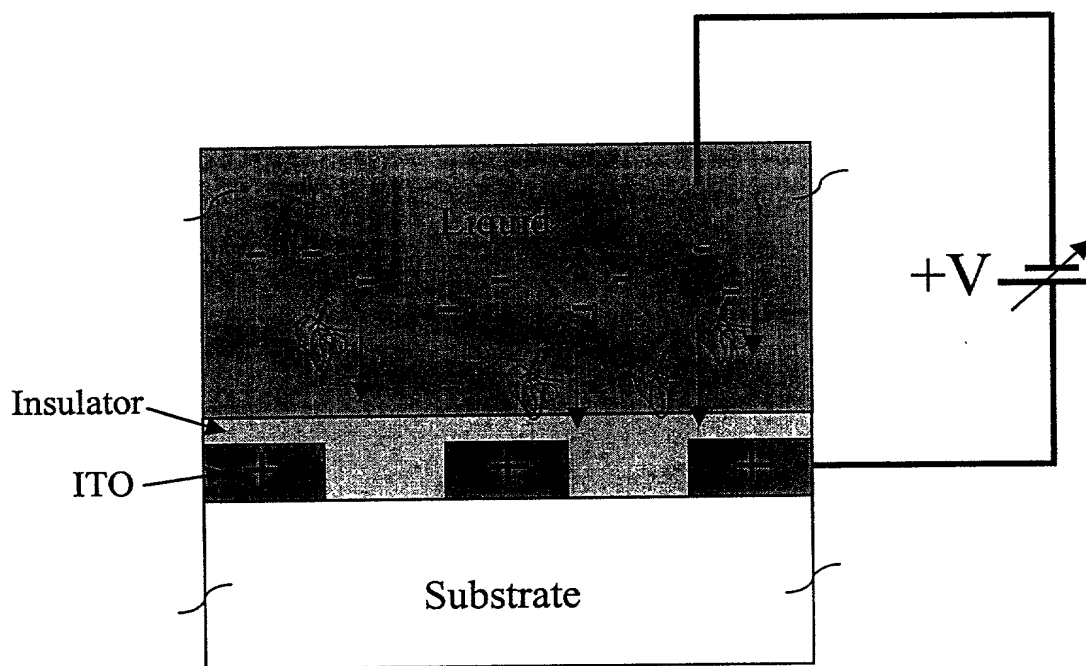


Figure 15



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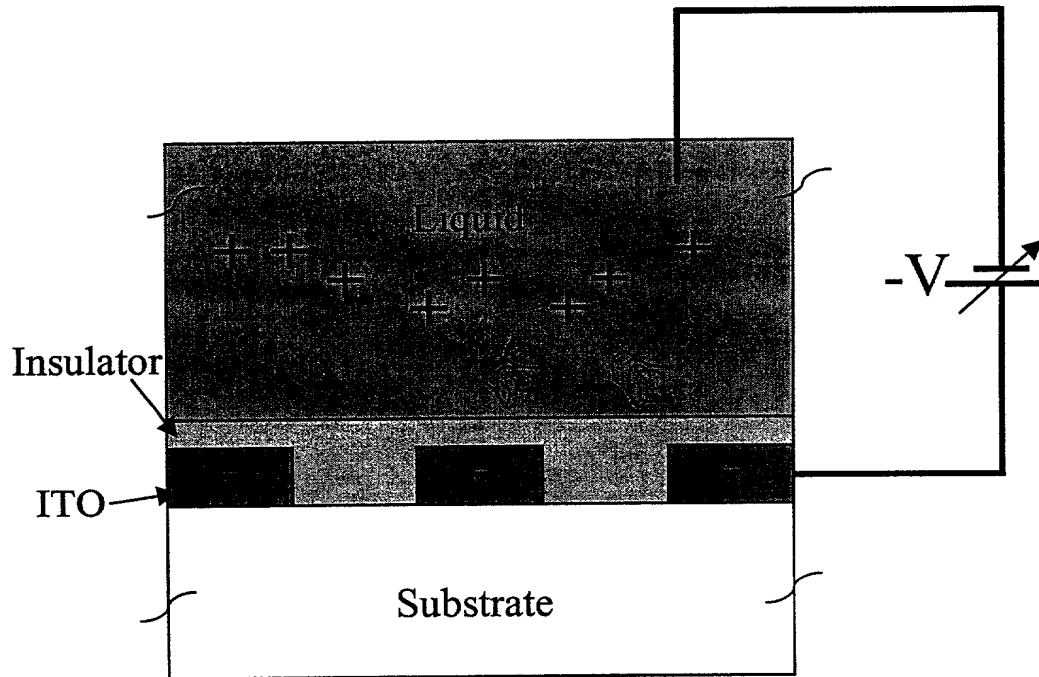


Figure 16

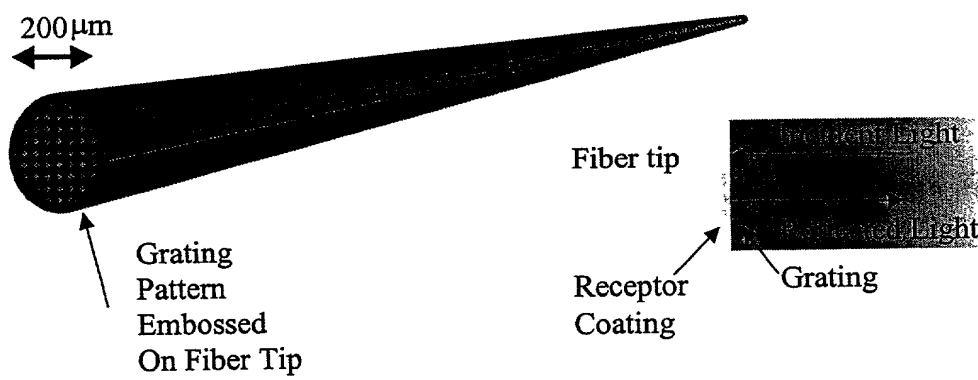


Figure 17

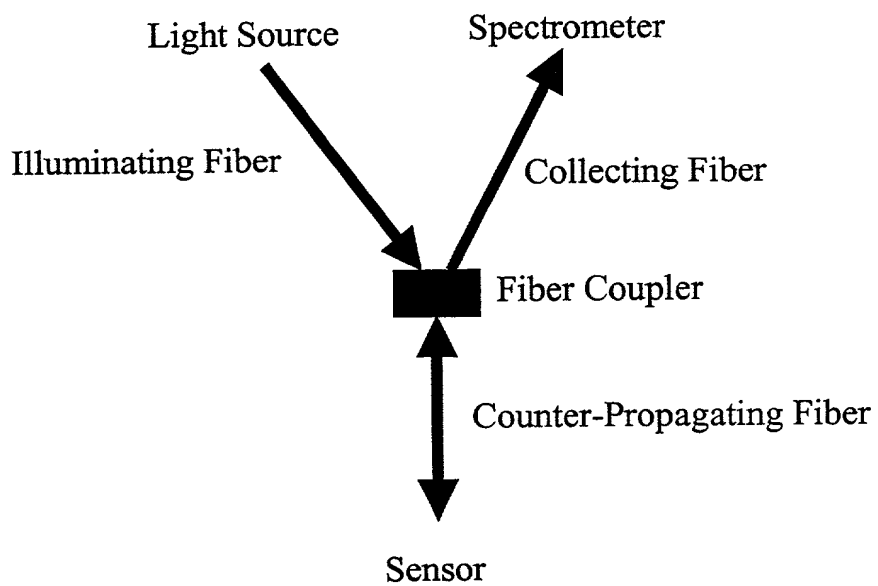
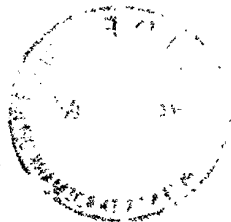


Figure 18



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Peak Wavelength

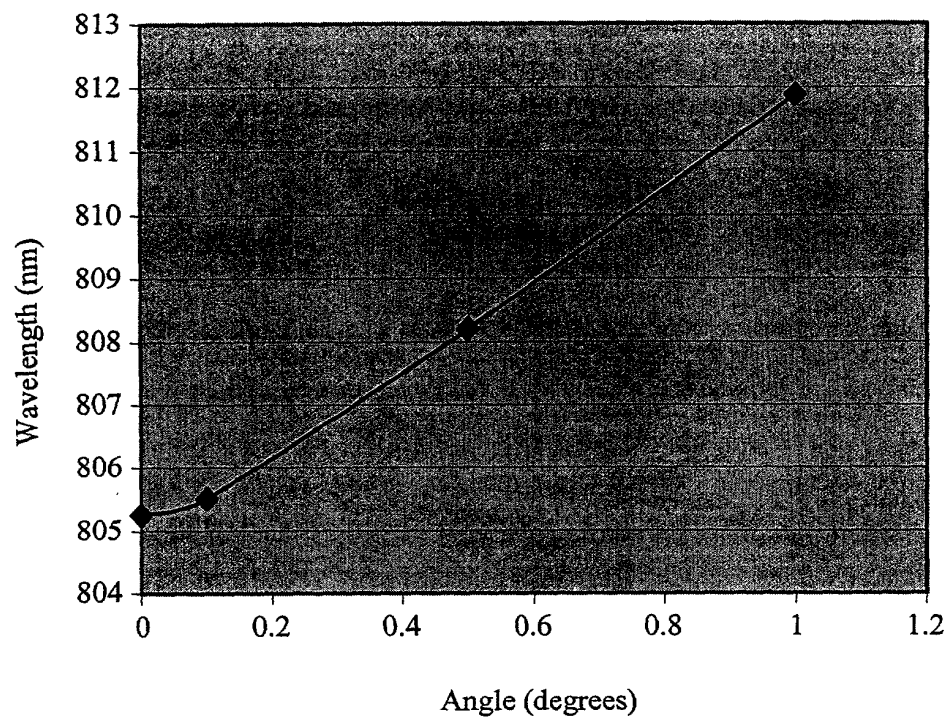


Figure 19

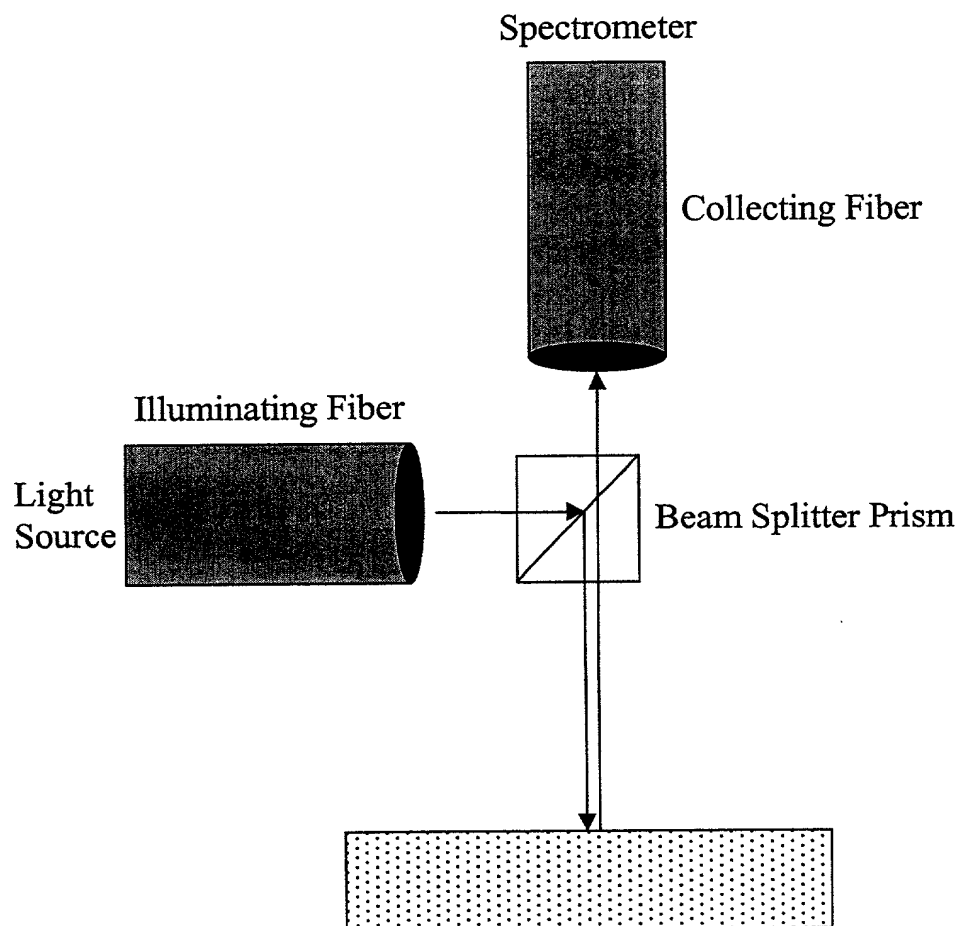


Figure 20

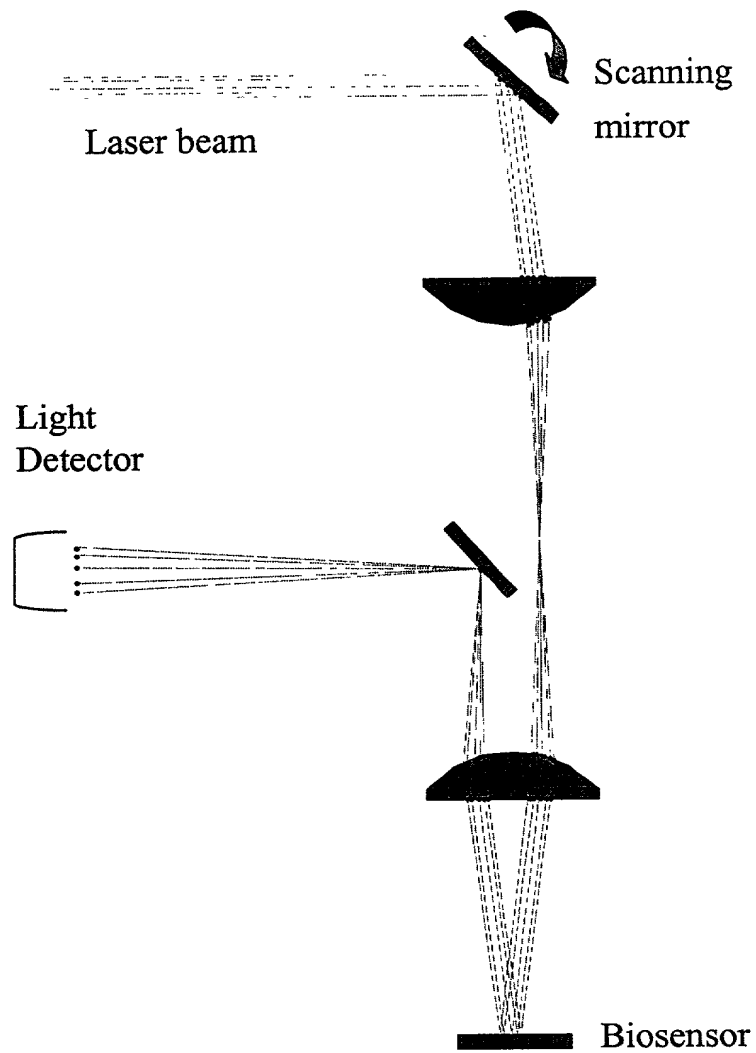


Figure 21

20140725095000

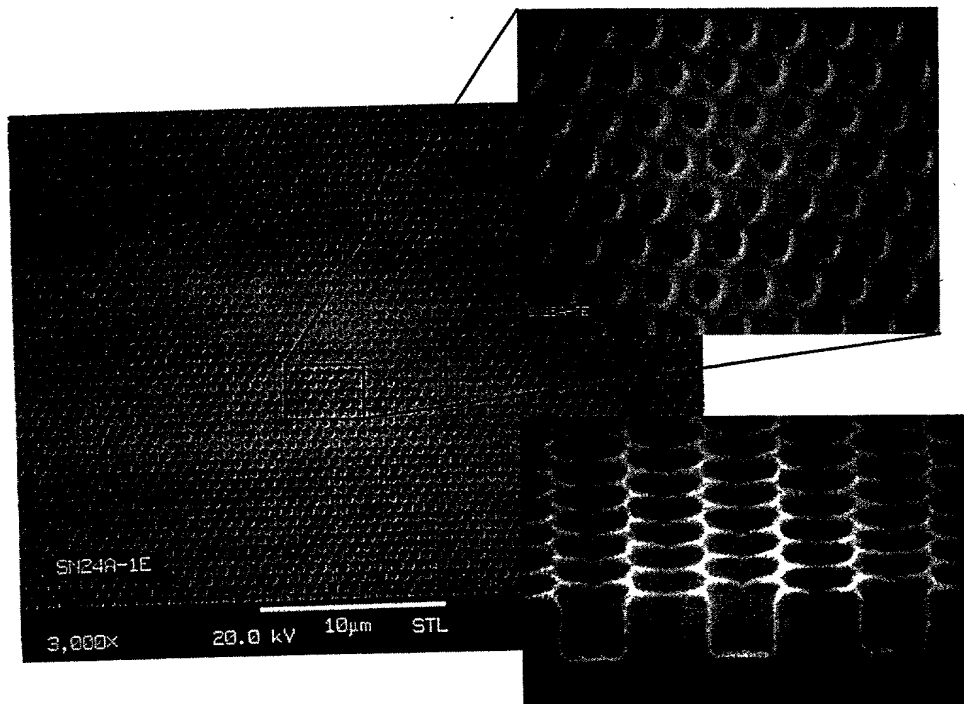


Figure 22



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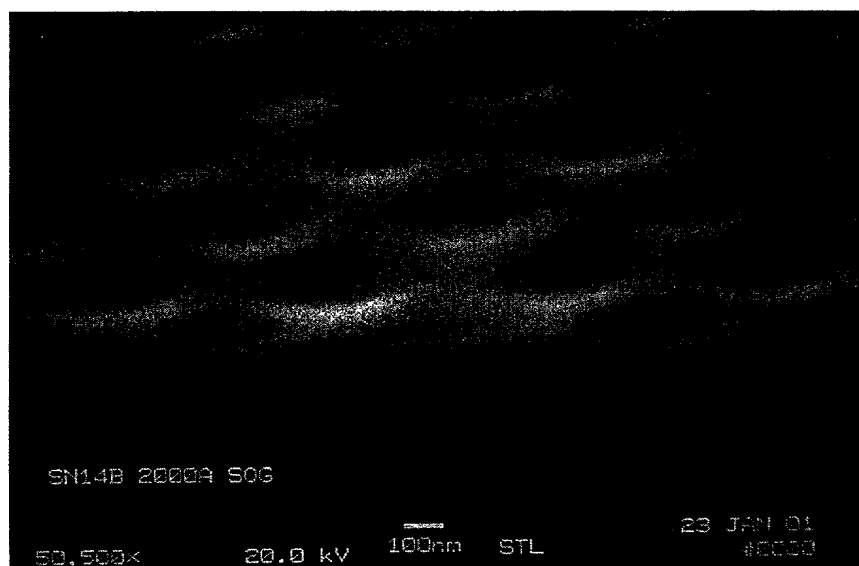


Figure 23

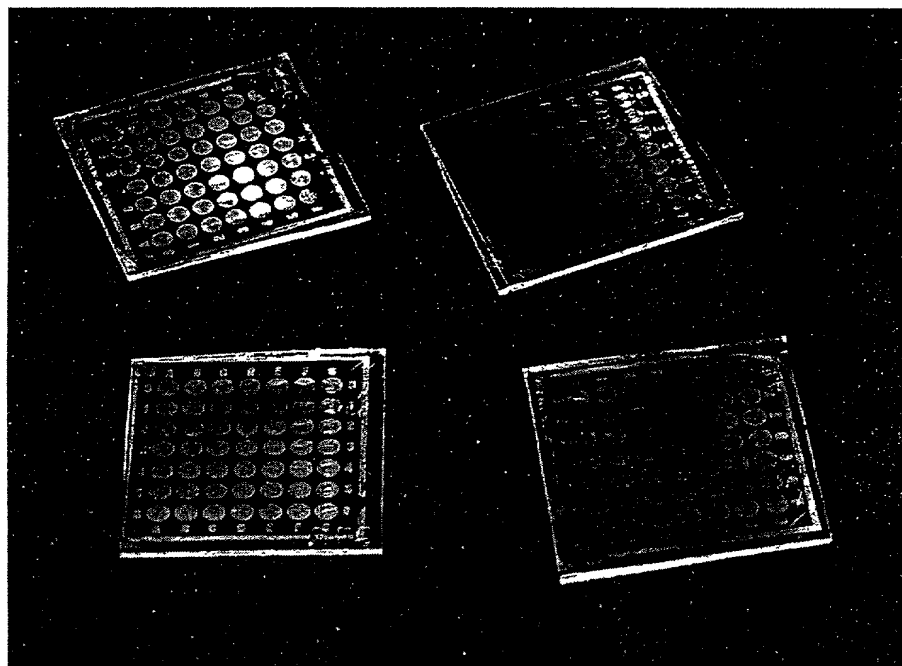


Figure 24

[illegible]

Albumin Deposition on Resonant Reflector

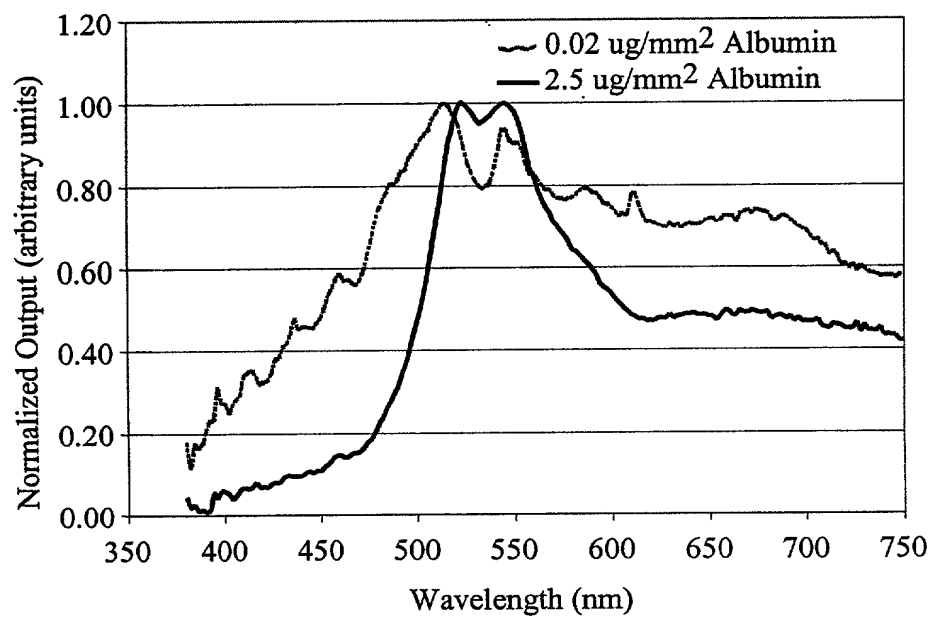


Figure 25

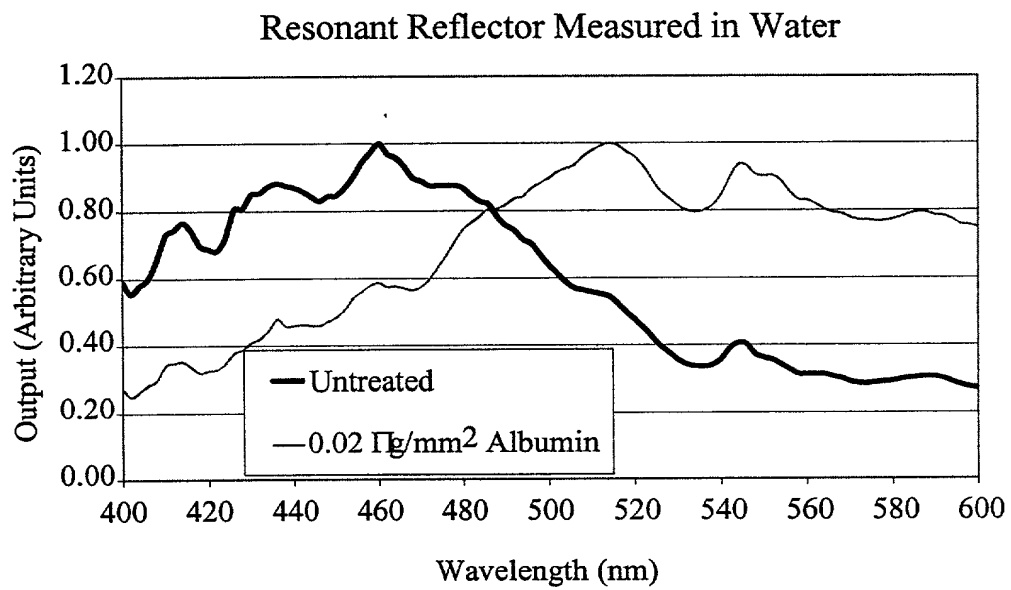


Figure 26

Bacteria immobilization on structure

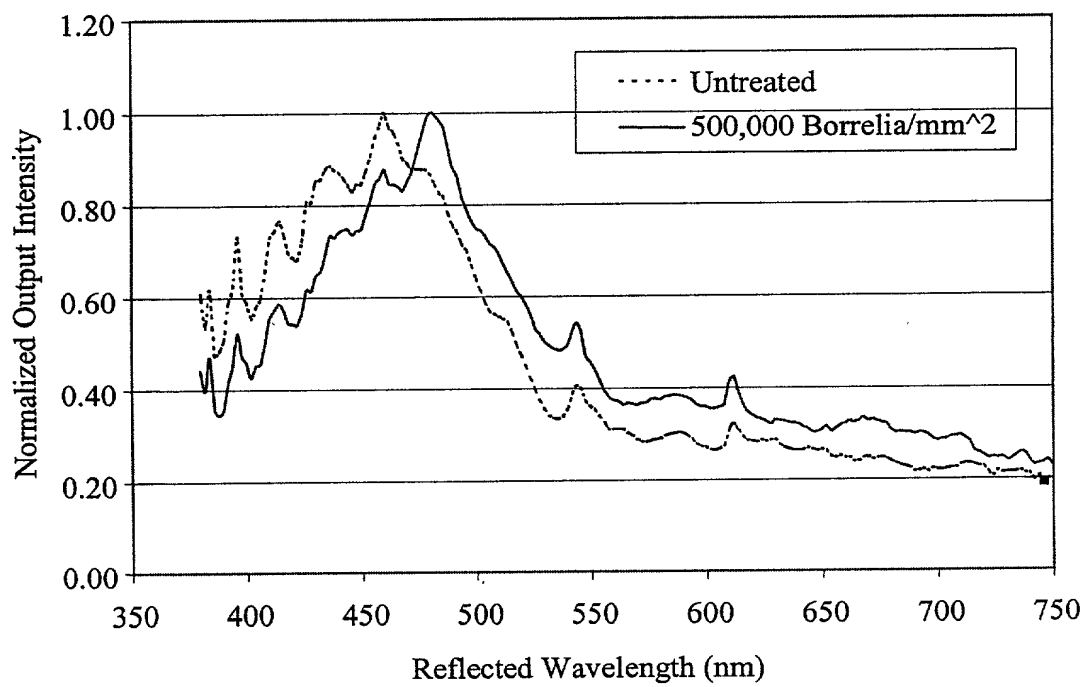


Figure 27

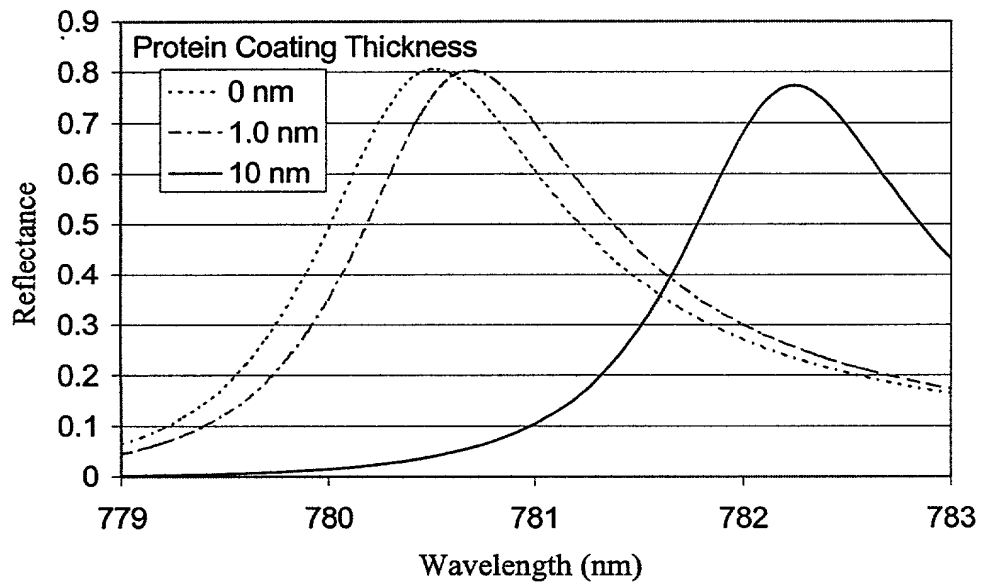


Figure 28

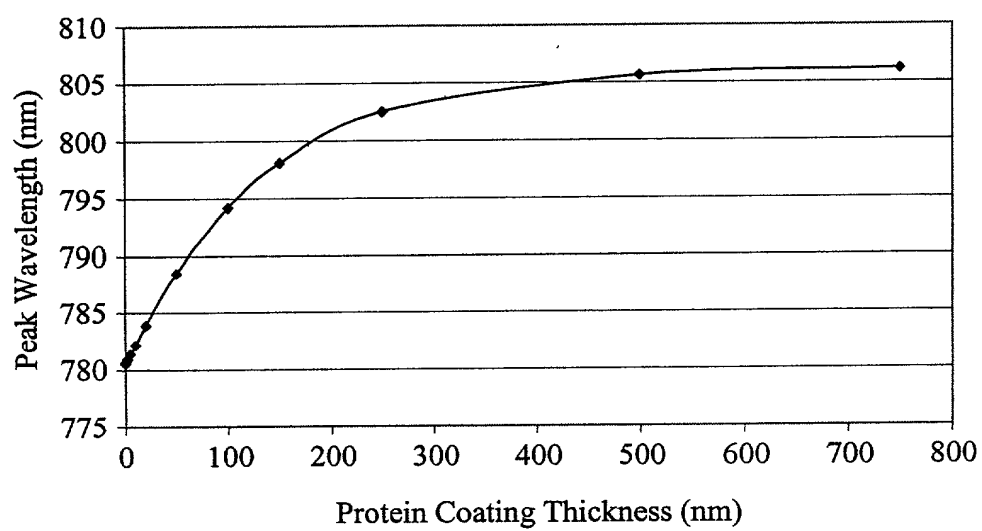


Figure 29

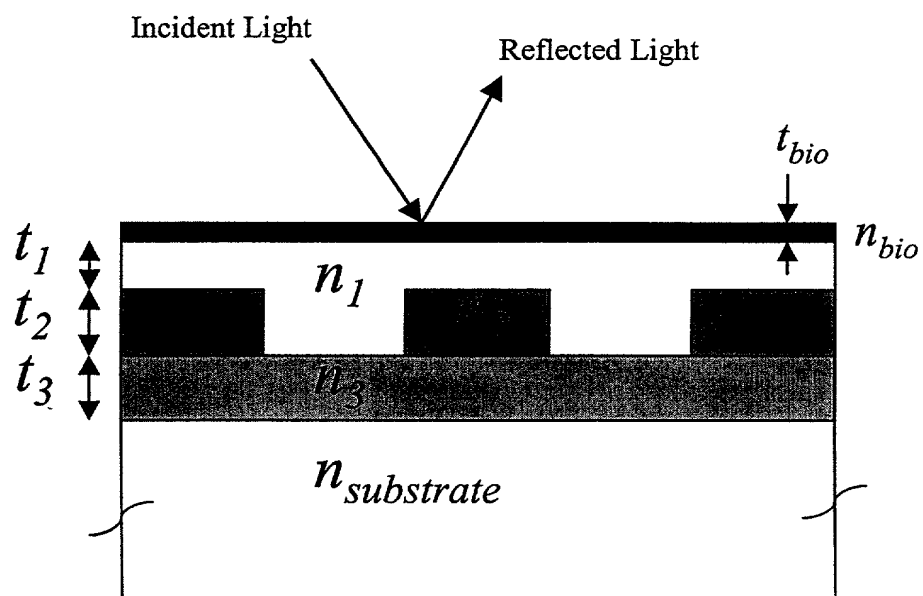


Figure 30

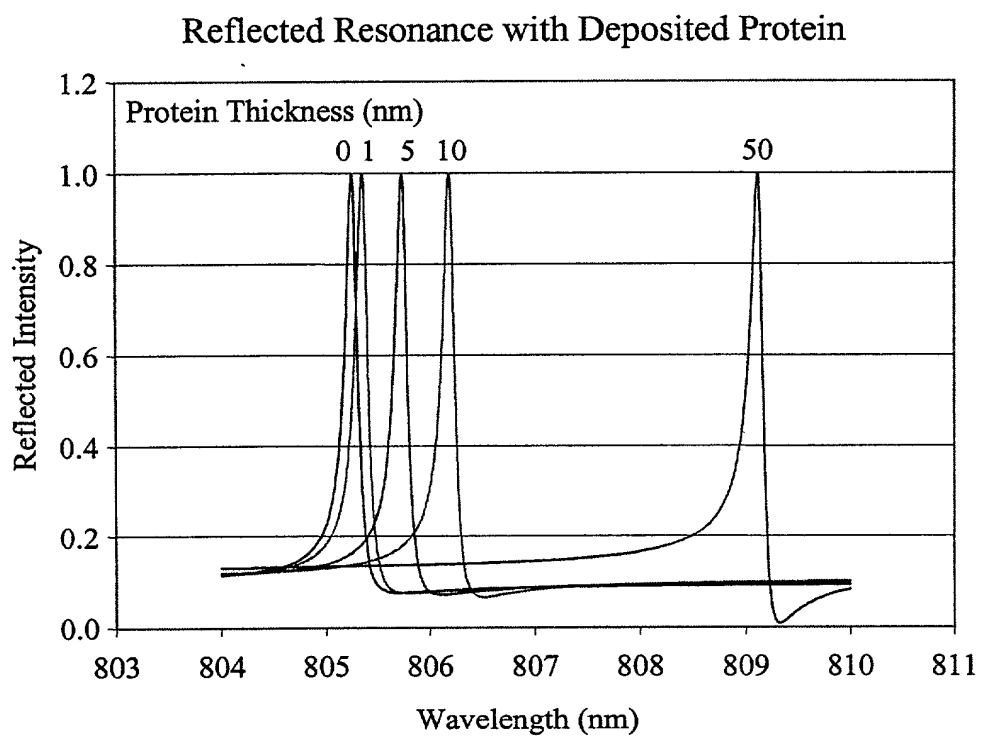


Figure 31

Resonant Peak Wavelength Dependence
on Deposited Protein Thickness

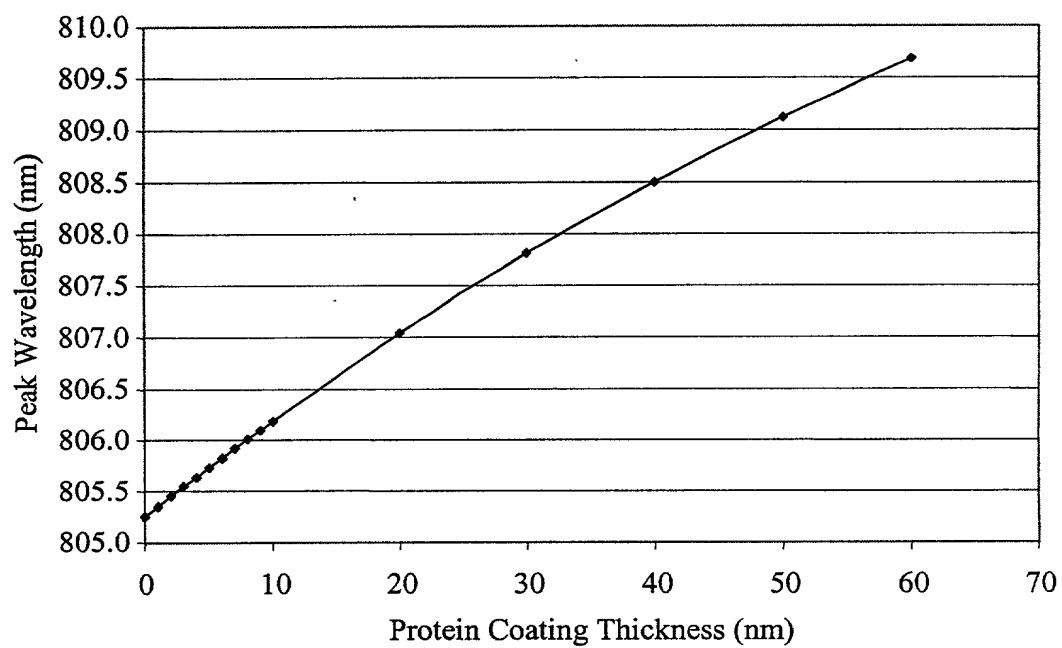


Figure 32

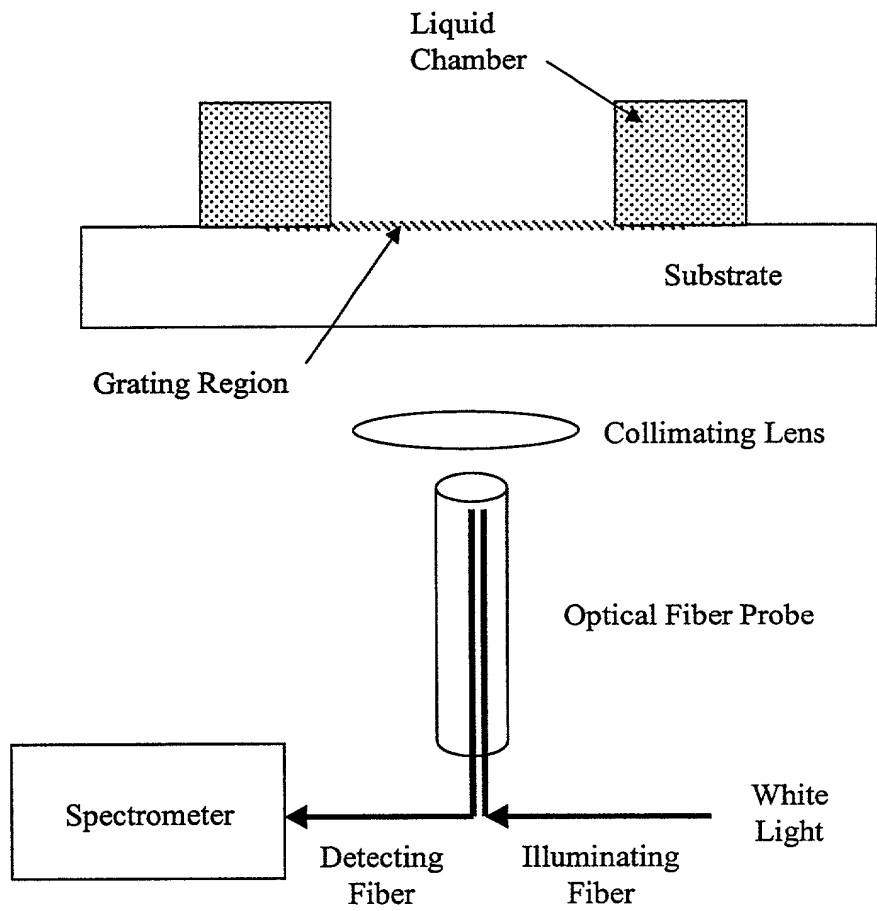


Figure 33

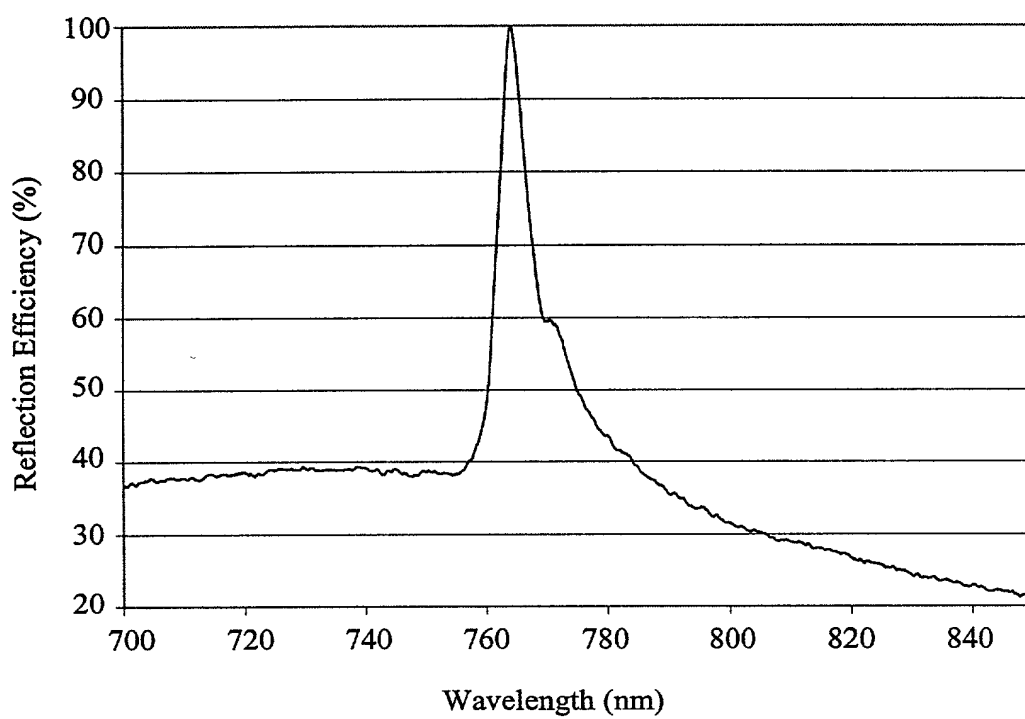


Figure 34

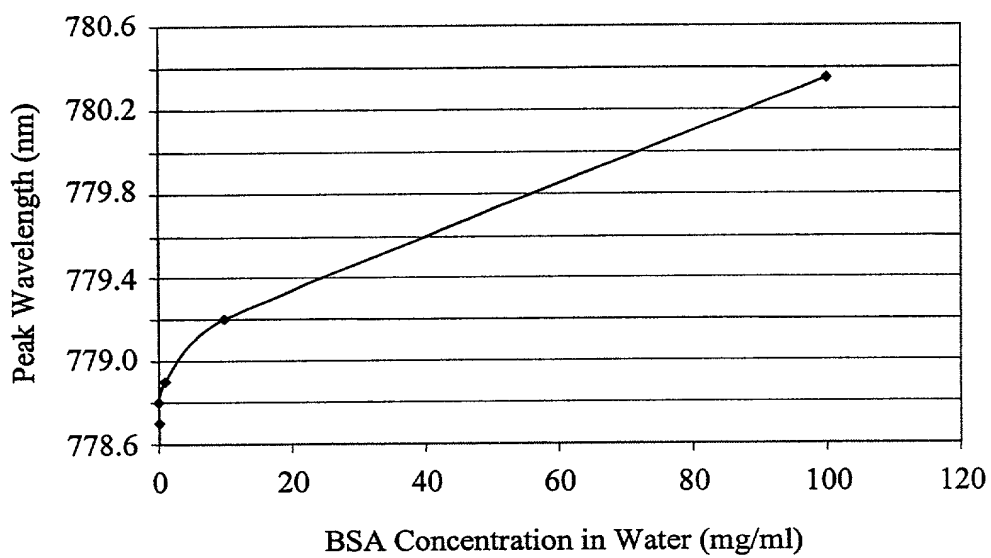


Figure 35

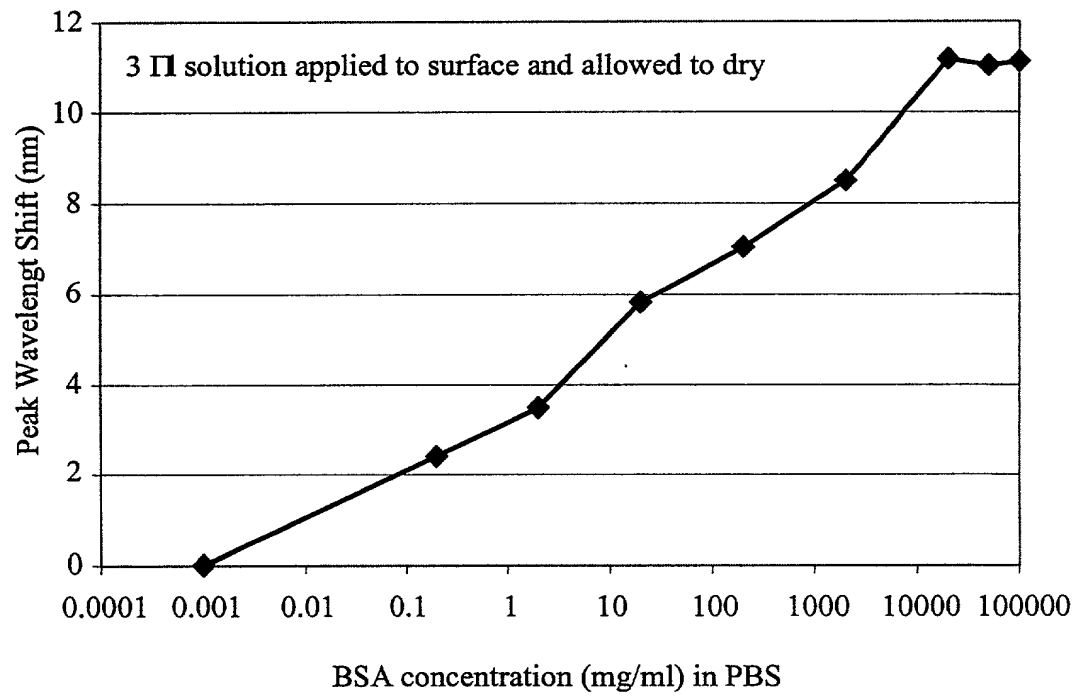


Figure 36

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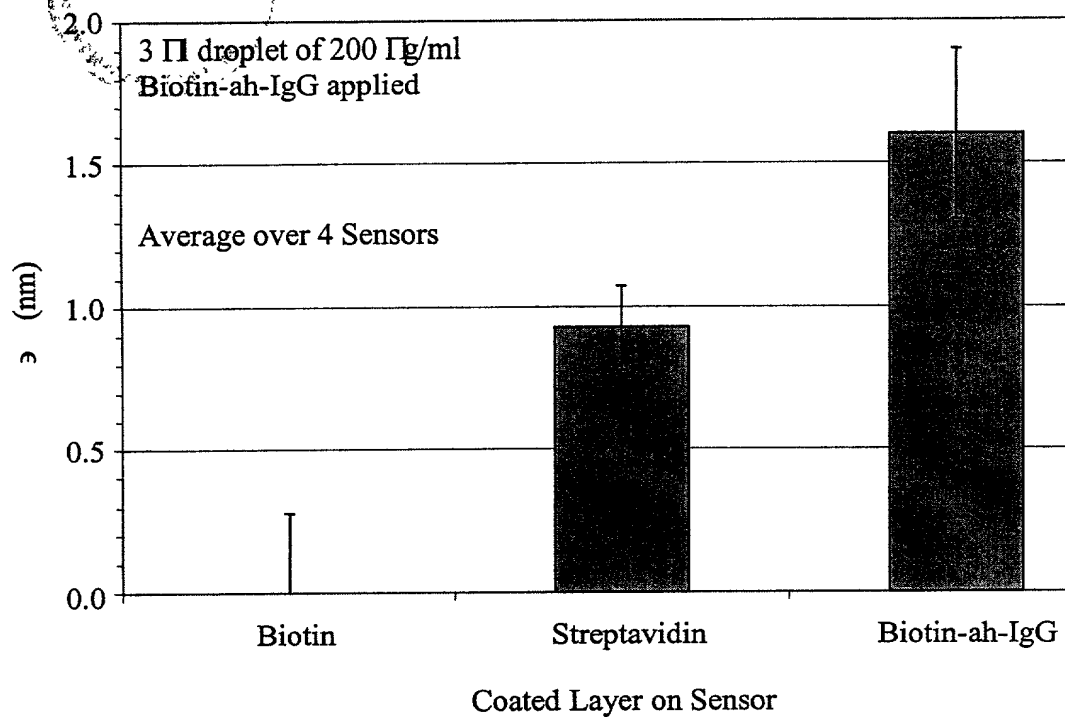


Figure 37A

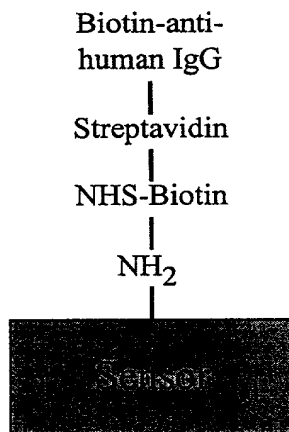


Figure 37B

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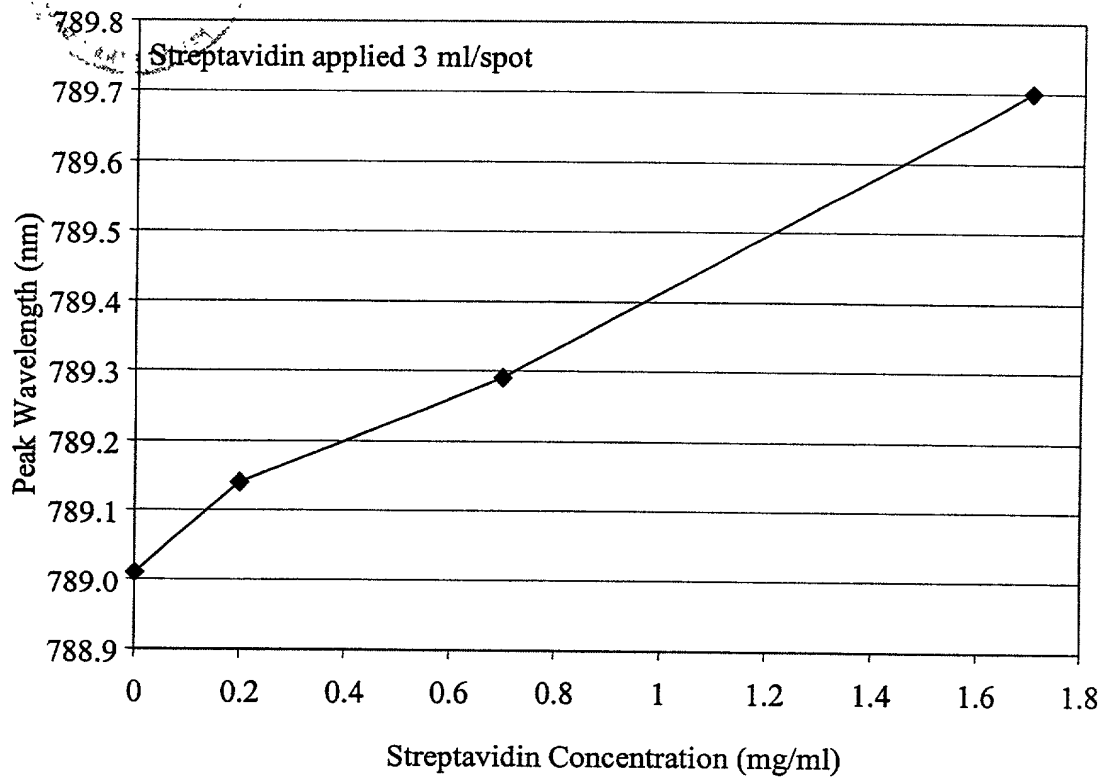


Figure 38A

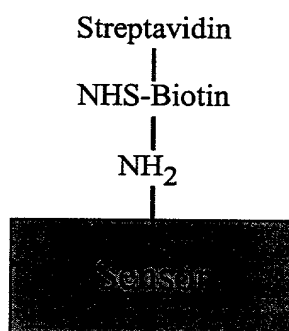


Figure 38B

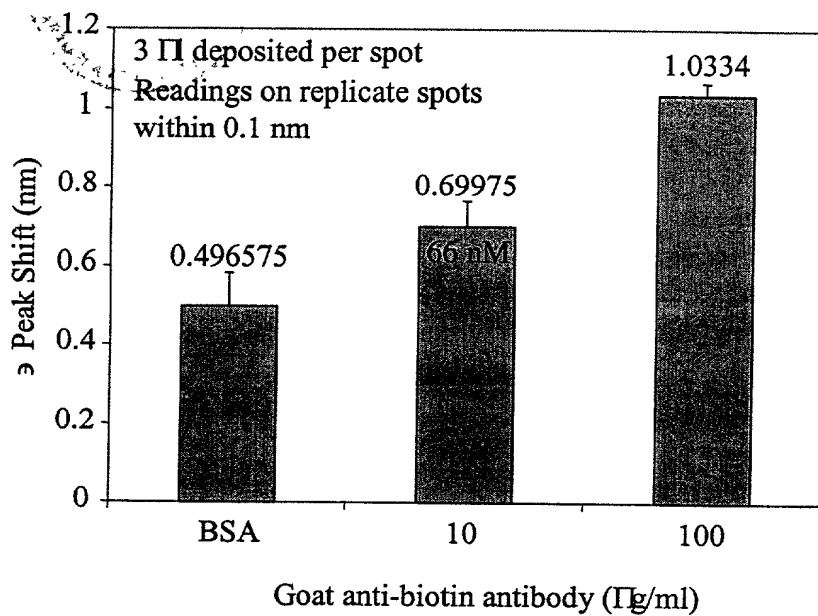


Figure 39A

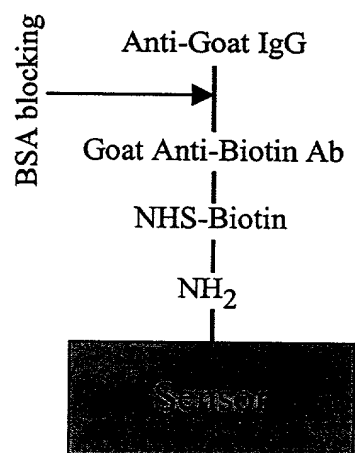


Figure 39B

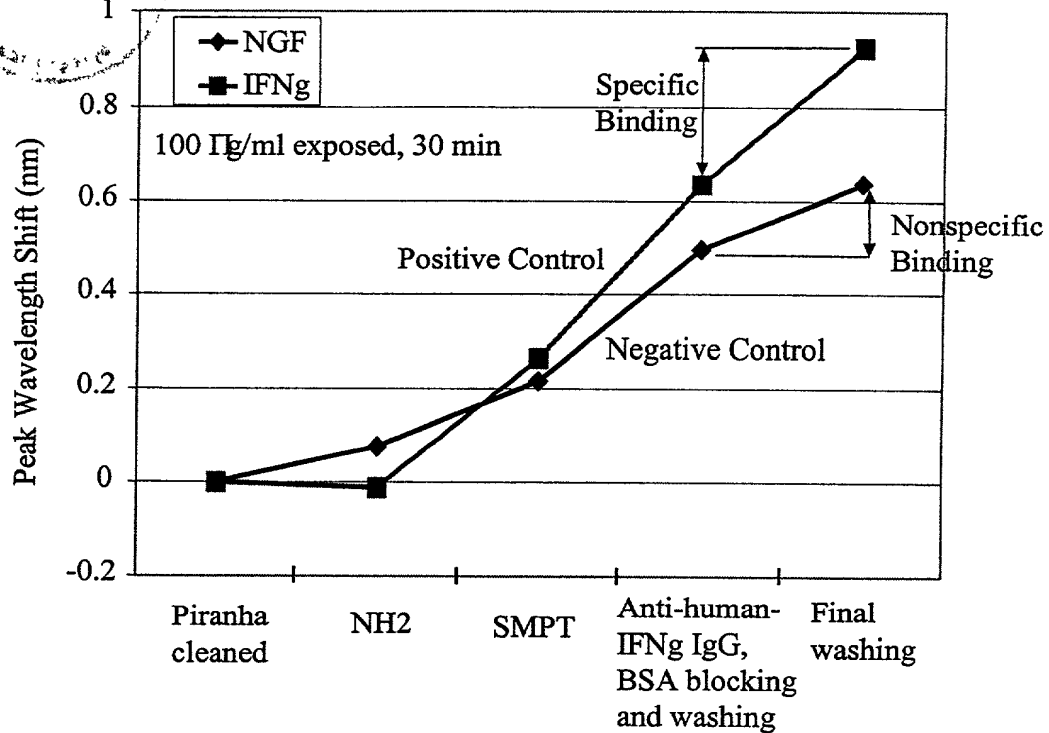


Figure 40A

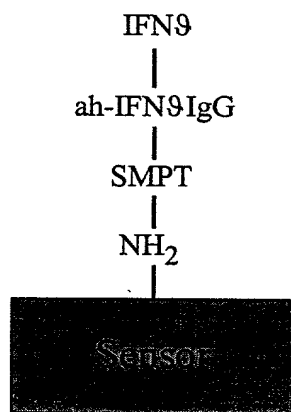


Figure 40B

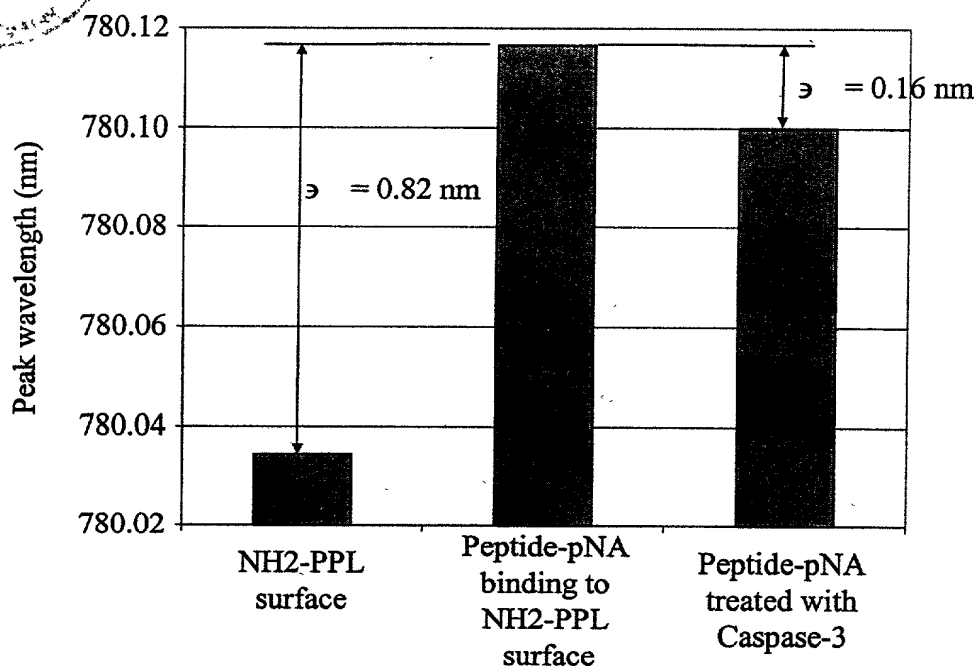


Figure 41A

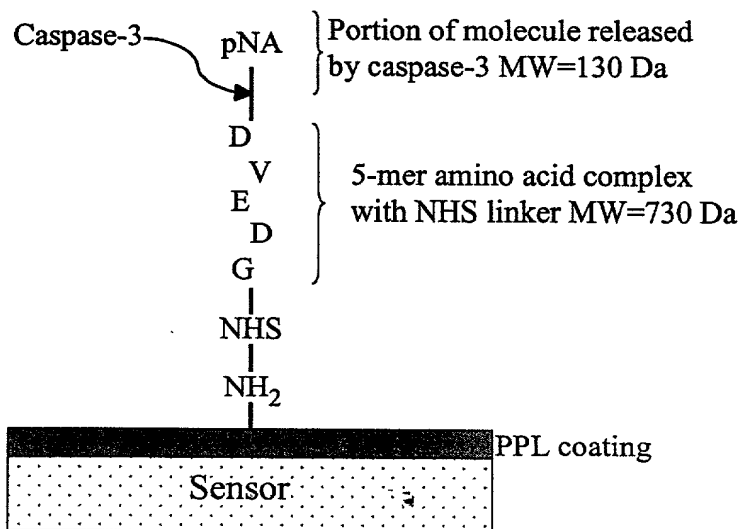


Figure 41B

Measured shifting of the resonant wavelength caused by the binding of various biomolecular layers.

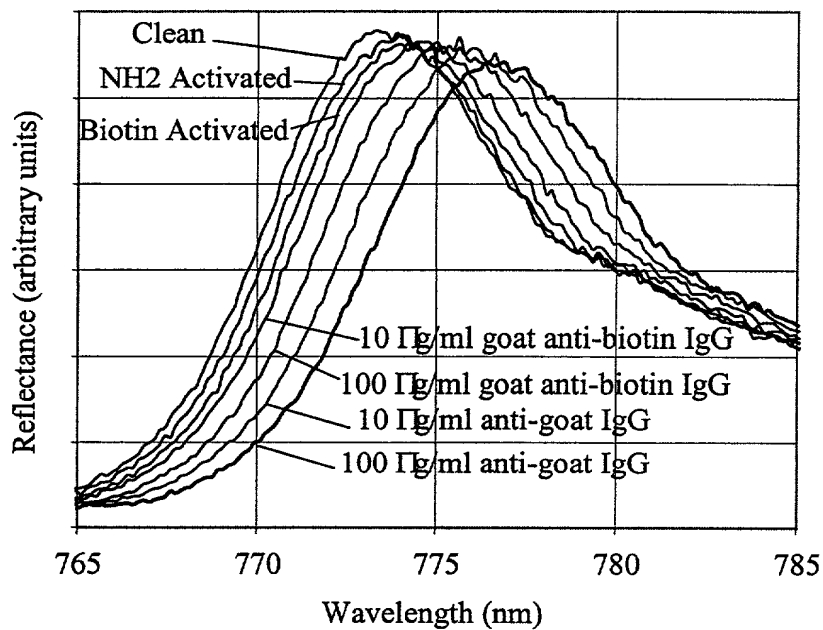


Figure 42A

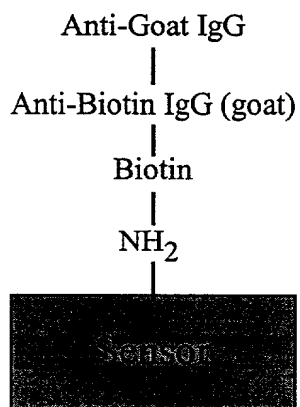


Figure 42B

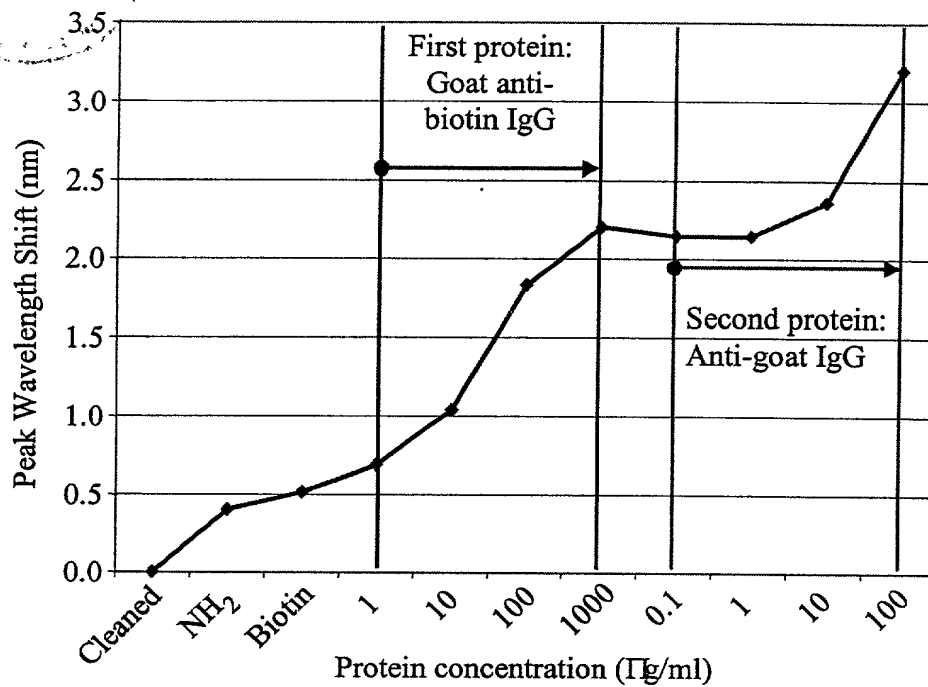


Figure 43A

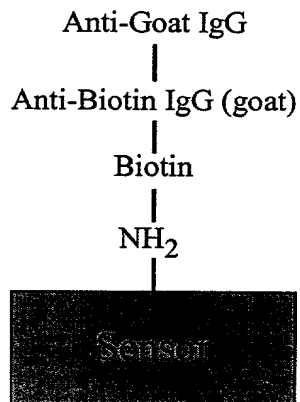


Figure 43B

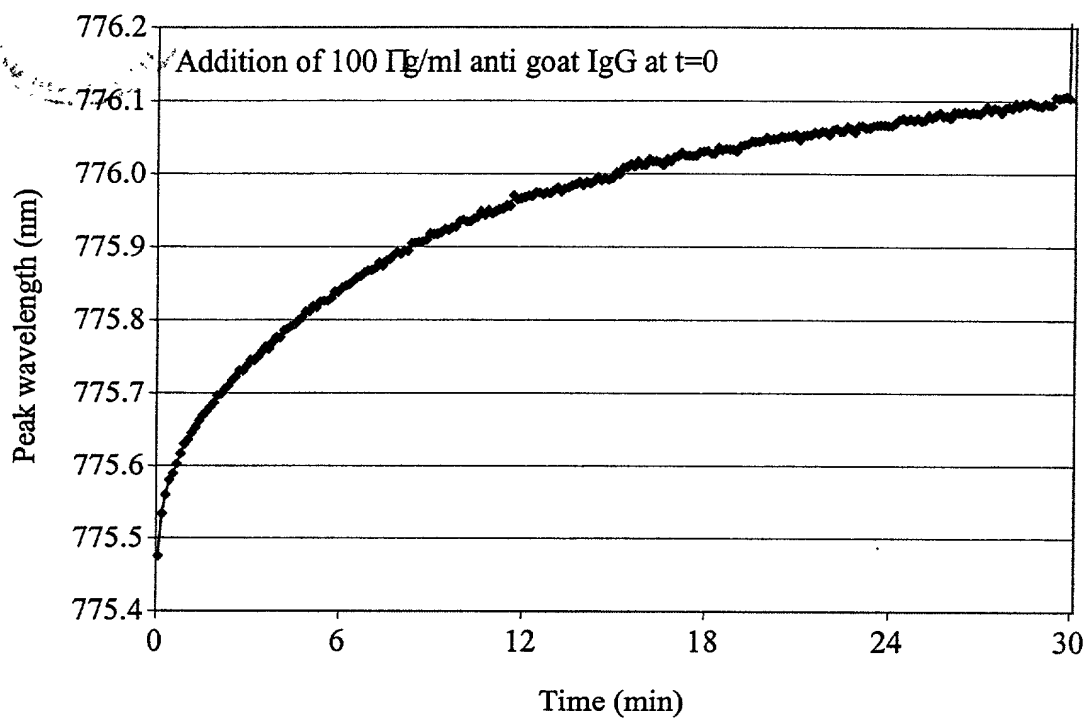


Figure 44A

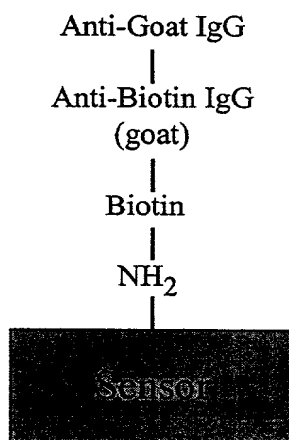


Figure 44B

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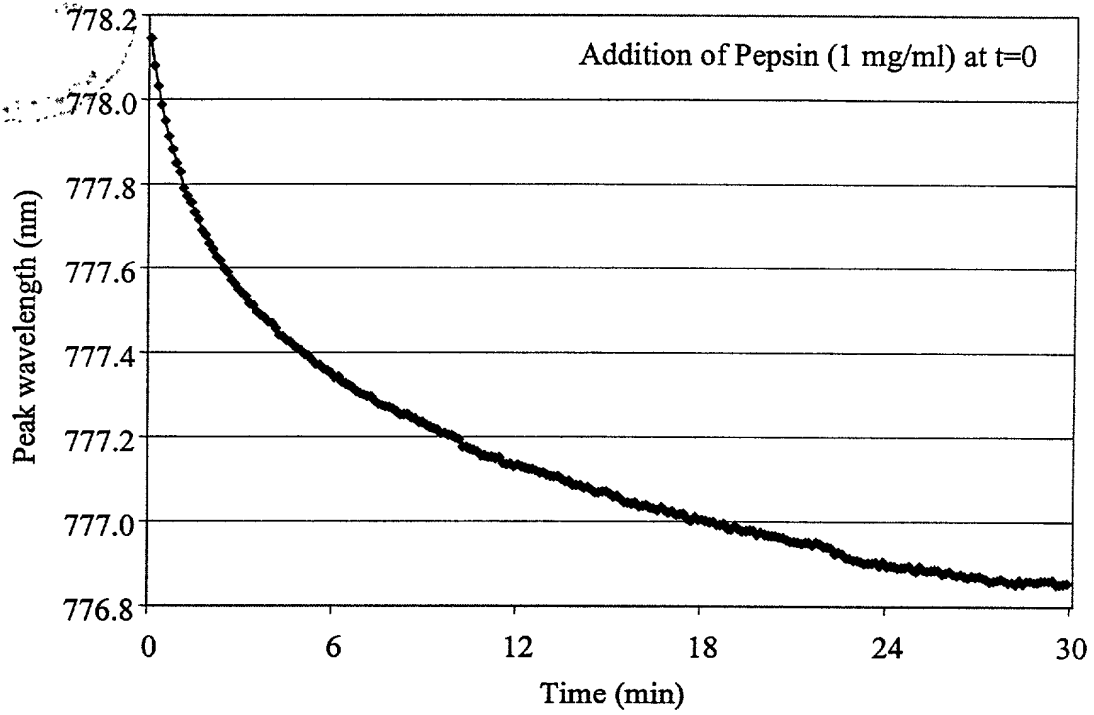


Figure 45A

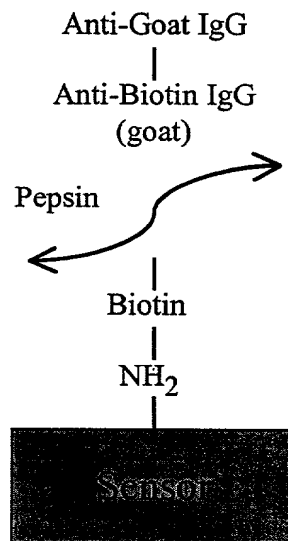


Figure 45B

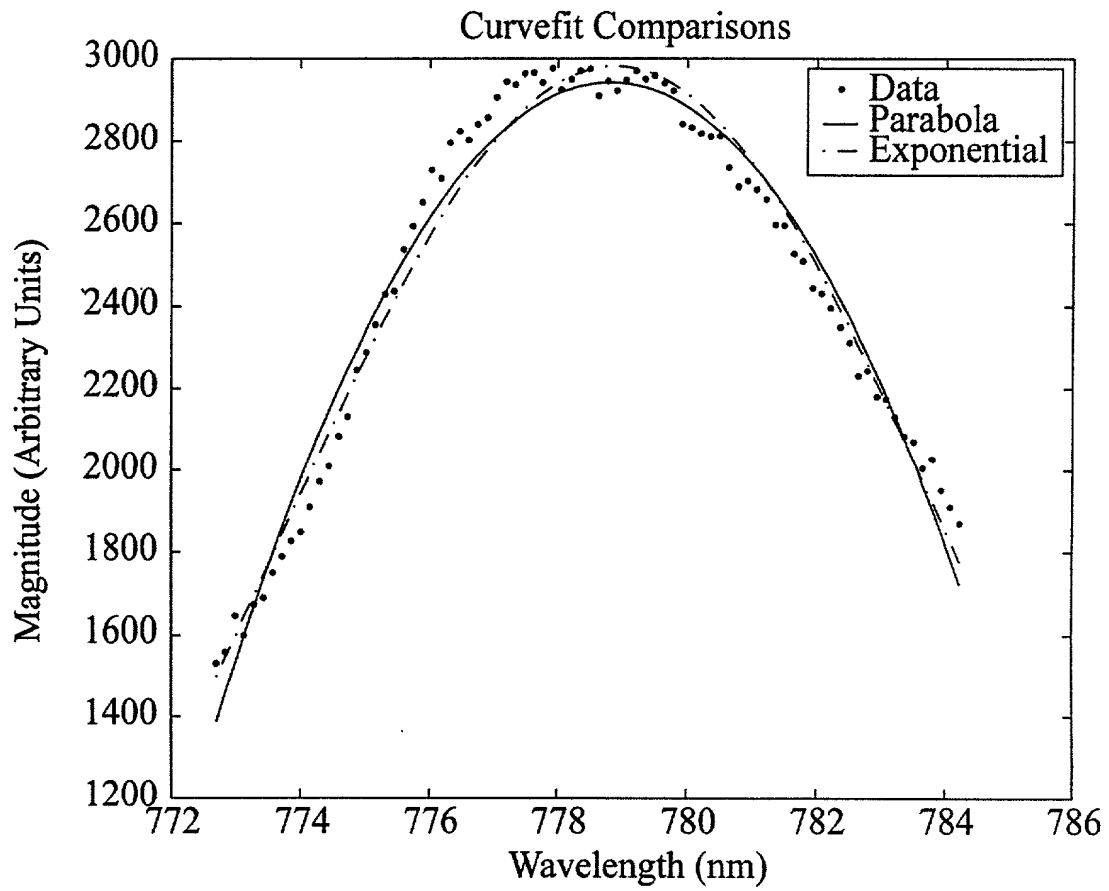


Figure 46

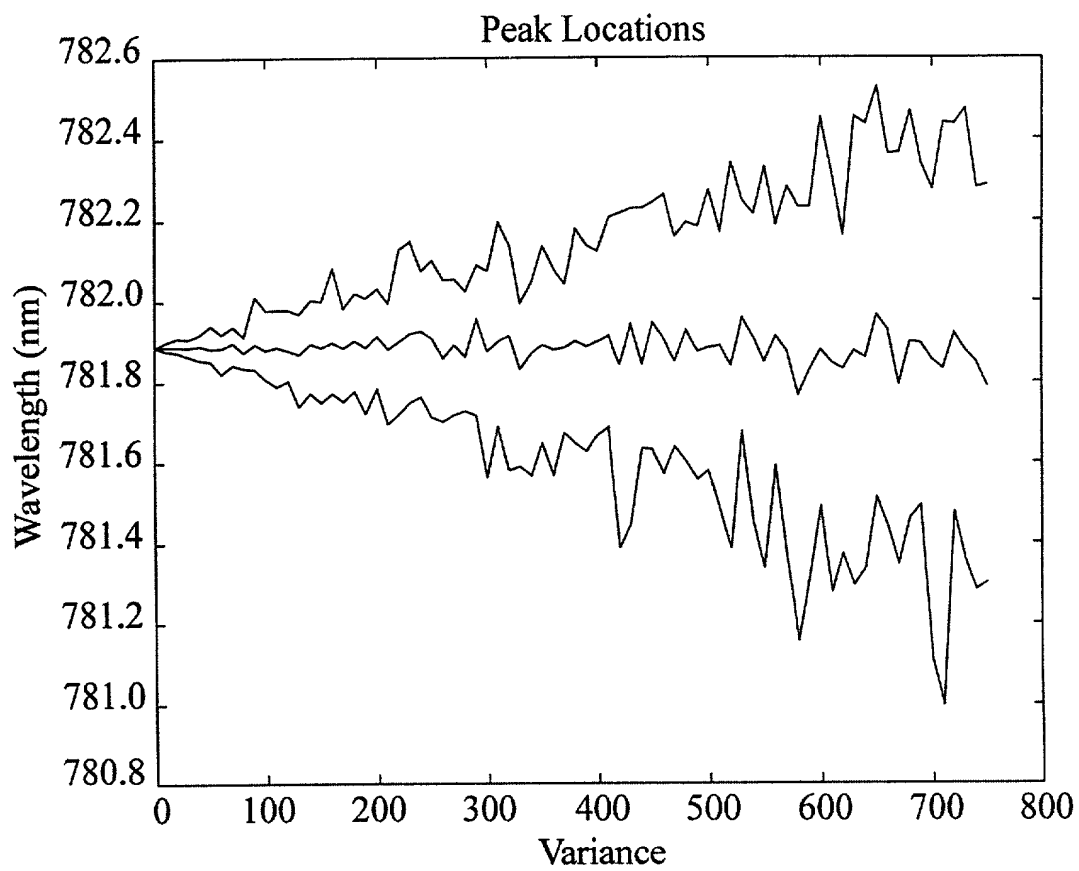
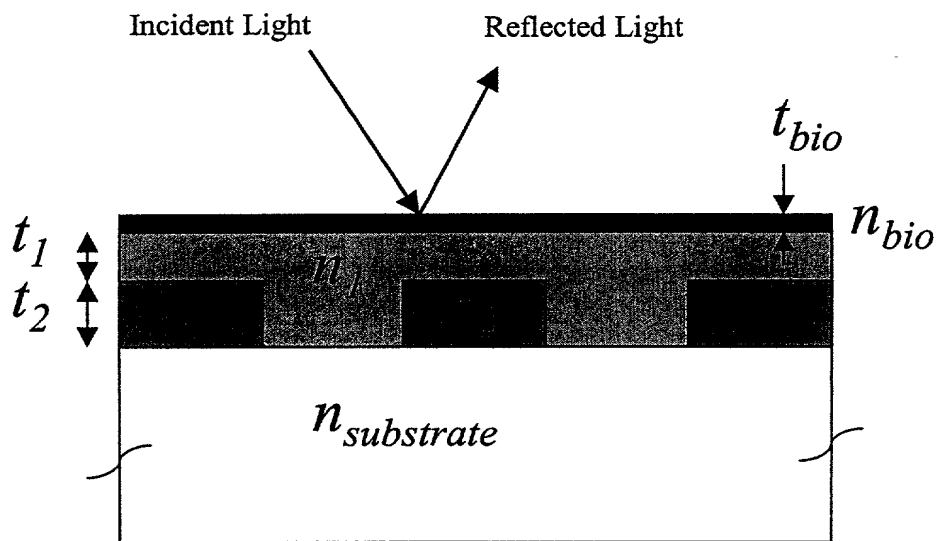


Figure 47



Material 1 = Electrical Insulator (photoresist, epoxy, glass)

Material 2 = Indium tin oxide conductor

Substrate = Glass

Figure 48



Concentric Circle Design

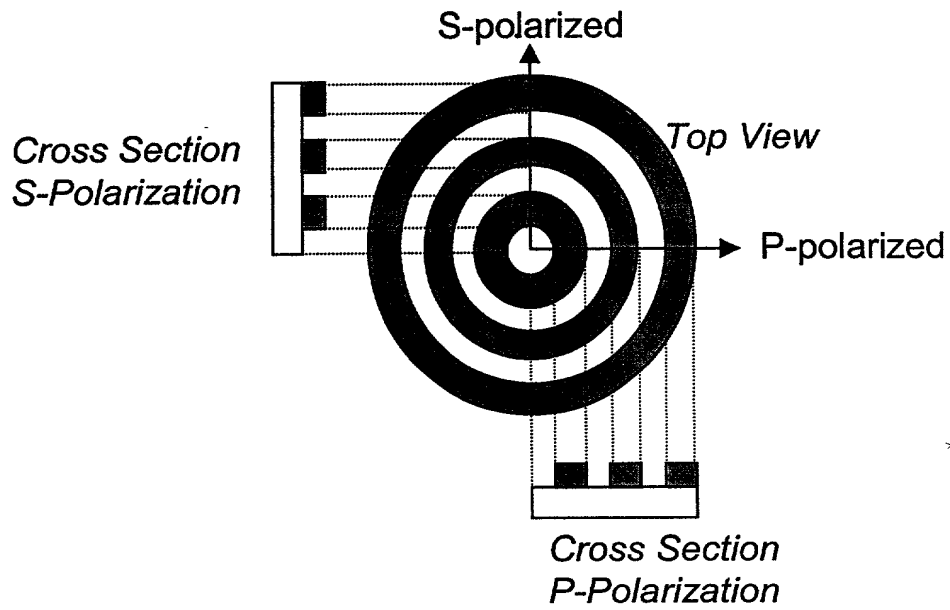


Figure 49



Hexagonal Grid Design

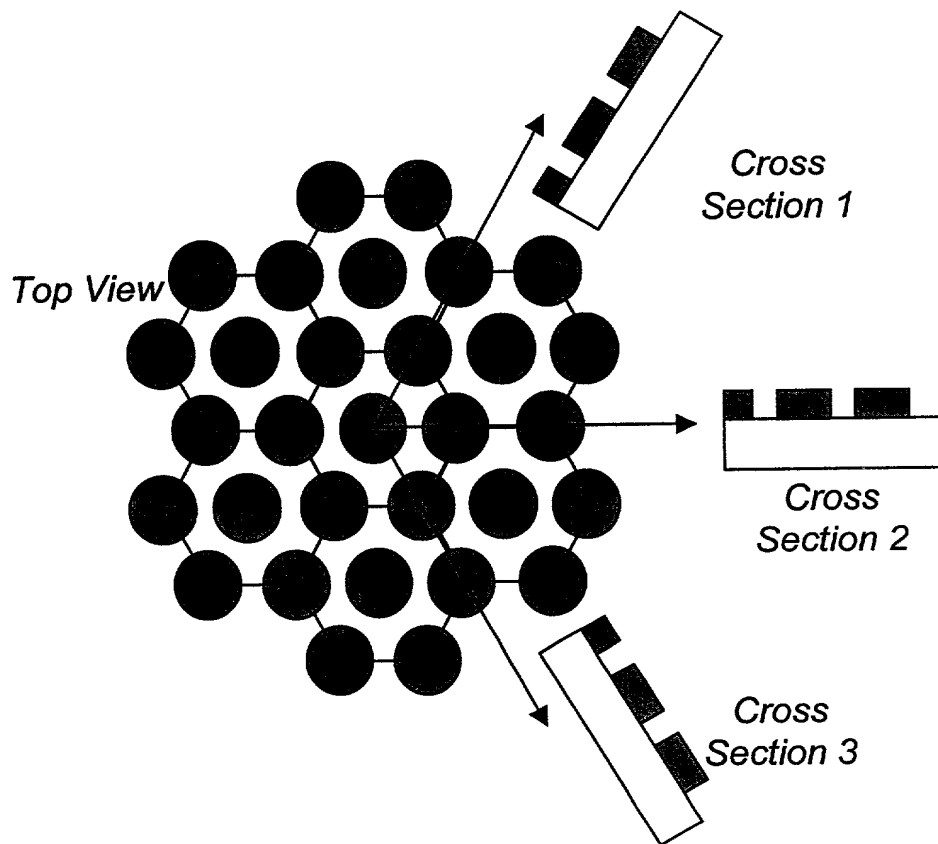


Figure 50

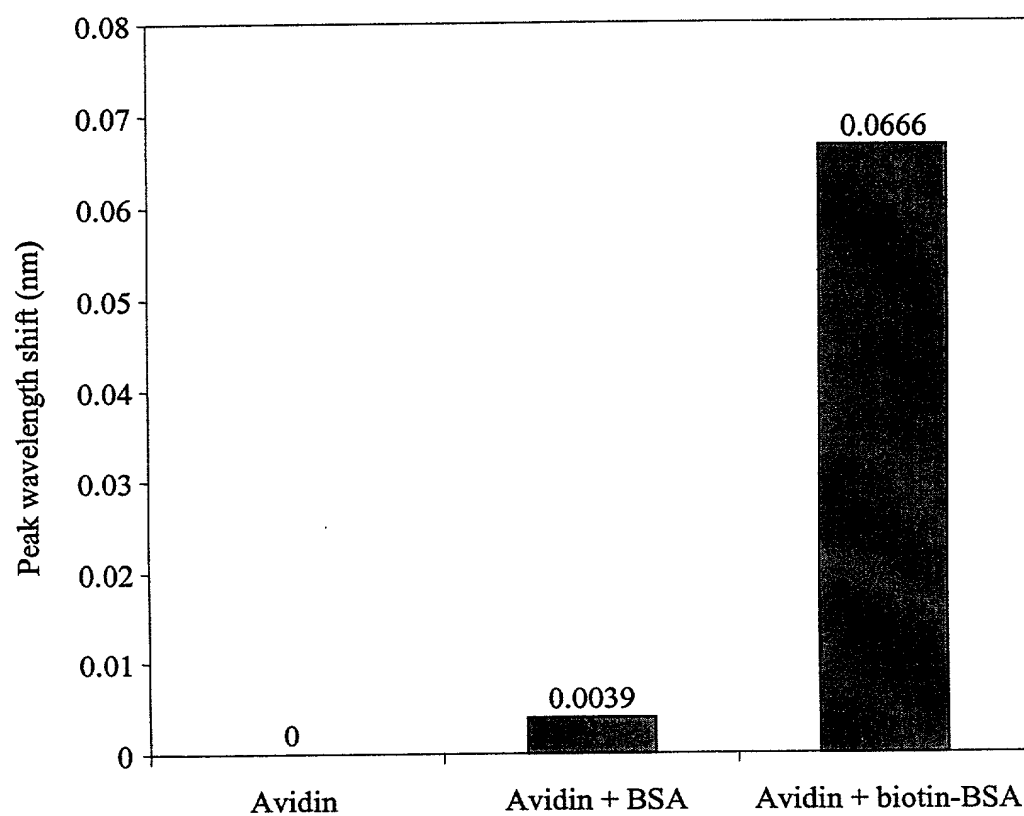


Figure 51

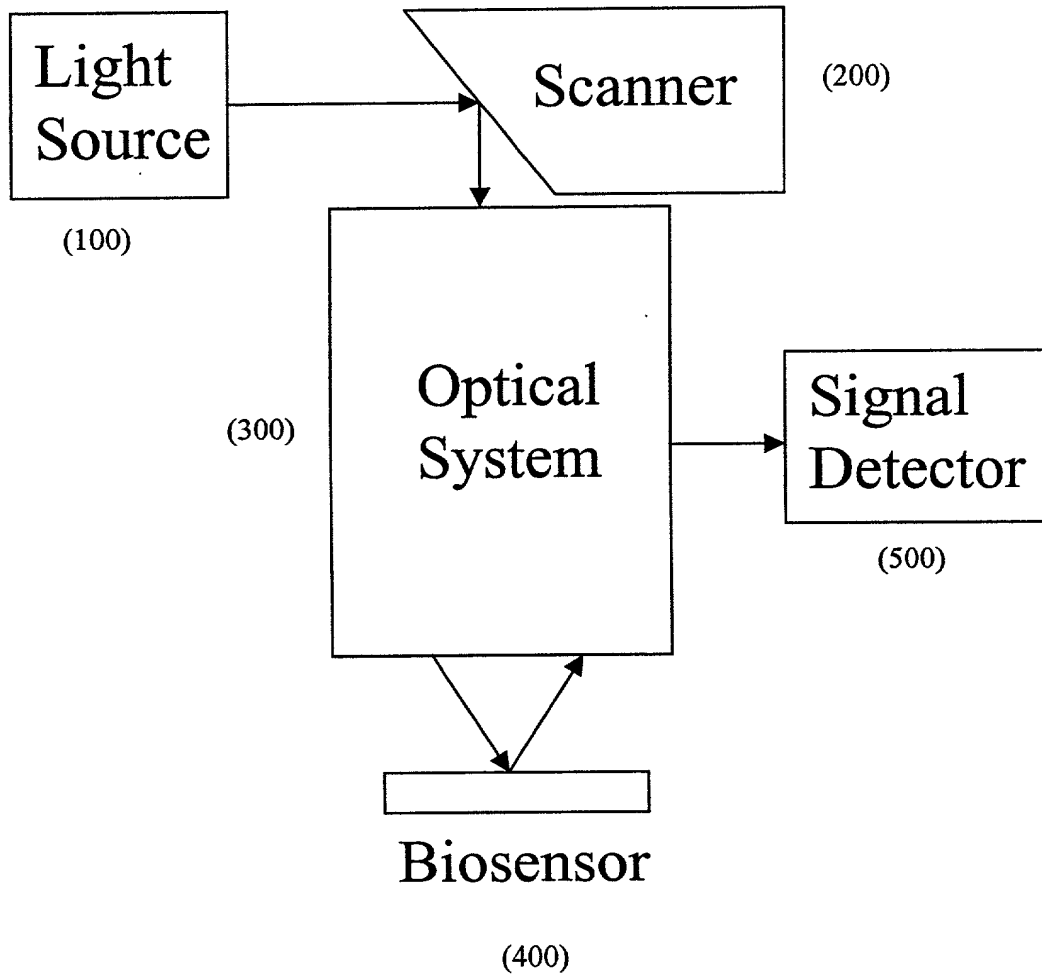


Figure 52